

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2035-05-11T22:09:11.000  
 Event type : XRgt  
 : No Uranus occs  
 : Ring occs: geocentric, topocentric  
 Gaia source ID : 3382553480249496448  
 2Mass ID (if available) : 06322106+2333095

ICRS Star Coord at Epoch: 06h 32m 21.06575s +23:33:09.65981s

RUWE (>1.4 is poor) : 0.98  
 K magnitude : 14.612  
 G magnitude : 16.745  
 RP magnitude : 16.047  
 BP magnitude : 17.304  
 DUPflag : 0  
 Distance (au) : 19.543  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 26.80  
 Sun-Target sep (deg) : 46.84  
 Sun-Moon sep (deg) : 11.20  
 B (ring opening deg) : 68.72  
 PA of pole (deg) : 70.59

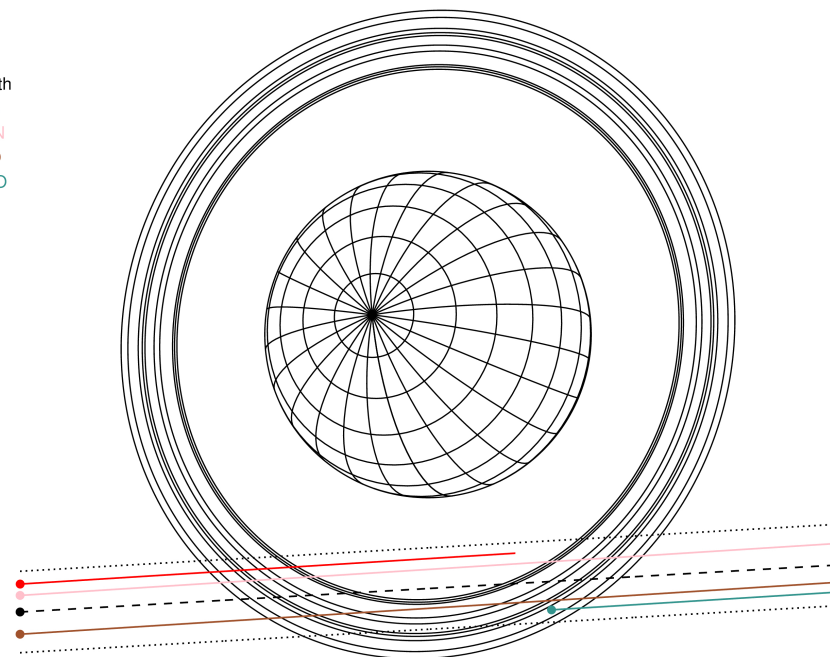
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2035-05-11T22:09:11.0000 α: 06 32 21.0657 δ: +23 33 09.660 C/A 2.796° PA 3.29 deg v\_sky +26.80 km/s D 19.54 AU  
 Credit: Styled after SORA/Lucky Star

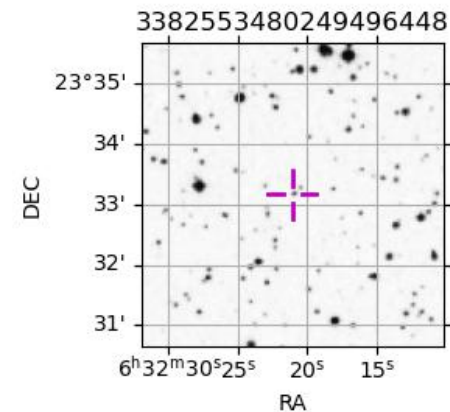
Uranus 2035-05-11T22:09:11 K14.61 G16.75 XRgt

Earth  
 PIC  
 TEN  
 RIO  
 ESO

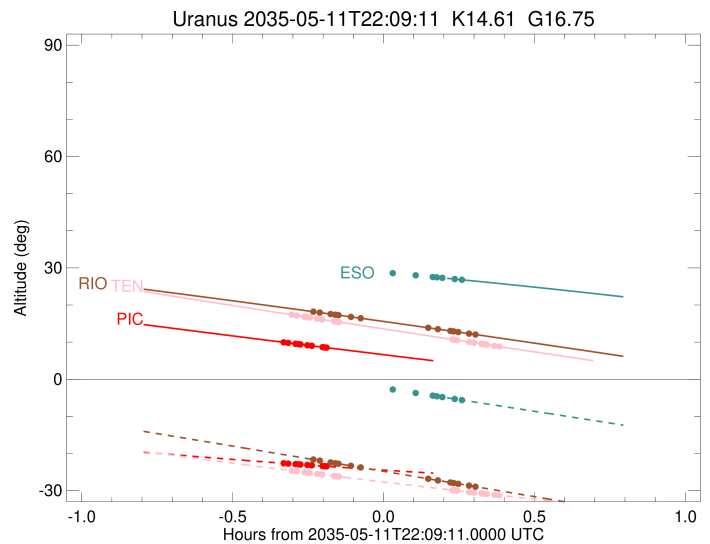
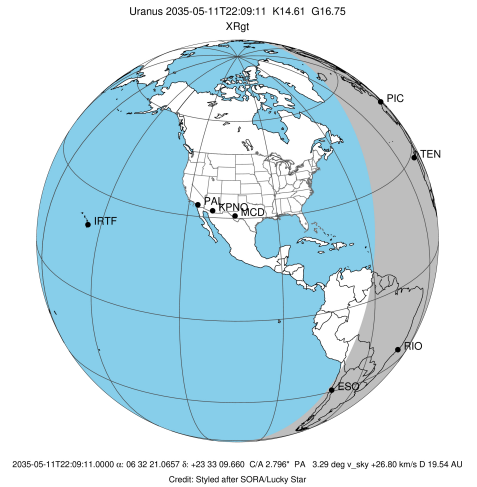


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++++			MAY 11 21:49 - MAY 11 21:57	PnnRin
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4					PnnRnn
MCD	McDonald Obs. 2.7m	30.7	256.0					PnnRnn
TEN	Teide Obs./Tenerife	28.3	343.5	+++++		+++++	MAY 11 21:50 - MAY 11 22:32	PnnRie
IRTF	Mauna Kea/IRTF	19.8	204.5					PnnRnn
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8	+++++		+++++	MAY 11 21:54 - MAY 11 22:27	PnnRie
ESO	European Southern Obs	-29.3	289.3			++	MAY 11 22:23 - MAY 11 22:24	PnnRne
AAT	Siding Spring (AAT)	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2035-05-11T22:11:56.170  
 Event type : XRgt  
 : No Uranus occs  
 : Ring occs: geocentric, topocentric  
 Observer code : PIC  
 Location : Pic du Midi  
 Latitude (deg) : 42.93656  
 E. Longitude (deg) : 0.14231  
 Altitude (km) : 2.890  
 Gaia source ID : 3382553480249496448  
 2Mass ID (if available) : 06322106+2333095  
 ICRS Star Coord at Epoch: 06h 32m 21.06575s +23:33:09.65981s  
 RUWE (>1.4 is poor) : 0.98  
 K magnitude : 14.612  
 G magnitude : 16.745  
 RP magnitude : 16.047  
 BP magnitude : 17.304  
 DUPflag : 0  
 Distance (au) : 19.543  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 26.80  
 Sun-Target sep (deg) : 46.84  
 Sun-Moon sep (deg) : 10.94  
 B (ring opening deg) : 68.72  
 PA of pole (deg) : 70.59  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 2.472  
 C/A sky separation (km) : 35036.9  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk  
 URKALLvl.spk  
 ura111.bsp  
 IAU\_URANUS\_for\_RINGFIT.tpc  
 vgr2.ura111.bsp  
 ura161.bsp  
 vgr2.ura161.bsp  
 peph.ura160.bsp  
 earthstns\_itr93\_040916.bsp  
 earth\_720101\_070426.bpc  
 earth\_200101\_990628\_predict.bpc  
 pg3f0000r.bsp  
 pg490000r.bsp  
 naif0012.tls  
 earth\_flat\_IAU.spk

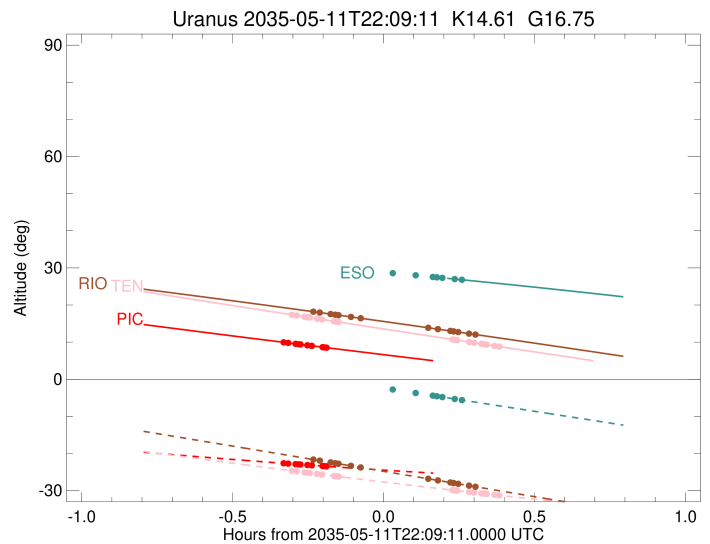
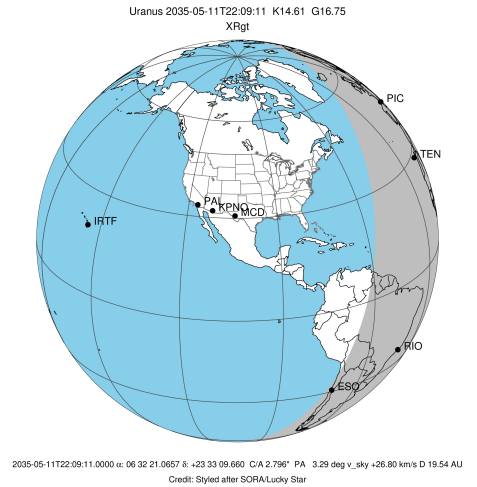


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-05-11T21:49:01.730		10.00	-22.60	51536.87	-20.68		
lambda	I	2035-05-11T21:50:15.604		9.79	-22.72	50026.71	-20.15		
delta	I	2035-05-11T21:51:42.869		9.55	-22.87	48300.35	-19.40		
gamma	I	2035-05-11T21:52:18.092		9.45	-22.92	47622.63	-19.07		
eta	I	2035-05-11T21:52:41.637		9.38	-22.96	47176.12	-18.85		
beta	I	2035-05-11T21:54:04.426		9.15	-23.09	45649.57	-18.01		
alpha	I	2035-05-11T21:54:56.776		9.00	-23.18	44720.92	-17.41		
4	I	2035-05-11T21:57:08.663		8.63	-23.39	42527.29	-15.79		
5	I	2035-05-11T21:57:22.011		8.60	-23.41	42315.21	-15.61		
6	I	2035-05-11T21:57:55.781		8.50	-23.46	41795.42	-15.15		

No planet occultations

6	E	2035-05-11T22:23:50.693		4.23x	-25.65	41812.20	15.17		
5	E	2035-05-11T22:24:19.714		4.15x	-25.69	42264.86	15.64		
4	E	2035-05-11T22:24:38.307		4.10x	-25.71	42544.03	15.82		
alpha	E	2035-05-11T22:26:46.441		3.75x	-25.87	44686.44	17.44		
beta	E	2035-05-11T22:27:42.306		3.60x	-25.94	45674.86	18.05		
eta	E	2035-05-11T22:29:03.472		3.39x	-26.04	47176.12	18.89		
gamma	E	2035-05-11T22:29:26.932		3.32x	-26.06	47622.04	19.12		
delta	E	2035-05-11T22:30:02.104		3.23x	-26.11	48300.35	19.45		
lambda	E	2035-05-11T22:31:29.152		3.00x	-26.21	50026.71	20.20		
epsilon	E	2035-05-11T22:32:17.315		2.87x	-26.26	51009.09	20.74		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2035-05-11T22:12:42.570  
 Event type : XRgt  
 : No Uranus occs  
 : Ring occs: geocentric, topocentric  
 Observer code : TEN  
 Location : Teide Obs./Tenerife  
 Latitude (deg) : 28.30050  
 E. Longitude (deg) : 343.48909  
 Altitude (km) : 2.395  
 Gaia source ID : 3382553480249496448  
 2Mass ID (if available) : 06322106+2333095  
 ICRS Star Coord at Epoch: 06h 32m 21.06575s +23:33:09.65981s  
 RUWE (>1.4 is poor) : 0.98  
 K magnitude : 14.612  
 G magnitude : 16.745  
 RP magnitude : 16.047  
 BP magnitude : 17.304  
 DUPflag : 0  
 Distance (au) : 19.543  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 26.80  
 Sun-Target sep (deg) : 46.84  
 Sun-Moon sep (deg) : 10.68  
 B (ring opening deg) : 68.72  
 PA of pole (deg) : 70.59  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 2.591  
 C/A sky separation (km) : 36723.9  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk  
 URKALLvl.spk  
 ura111.bsp  
 IAU\_URANUS\_for\_RINGFIT.tpc  
 vgr2.ura111.bsp  
 ura161.bsp  
 vgr2.ura161.bsp  
 peph.ura160.bsp  
 earthstns\_itrf93\_040916.bsp  
 earth\_720101\_070426.bpc  
 earth\_200101\_990628\_predict.bpc  
 pg3f0000r.bsp  
 pg490000r.bsp  
 naif0012.tls  
 earth\_flat\_IAU.spk

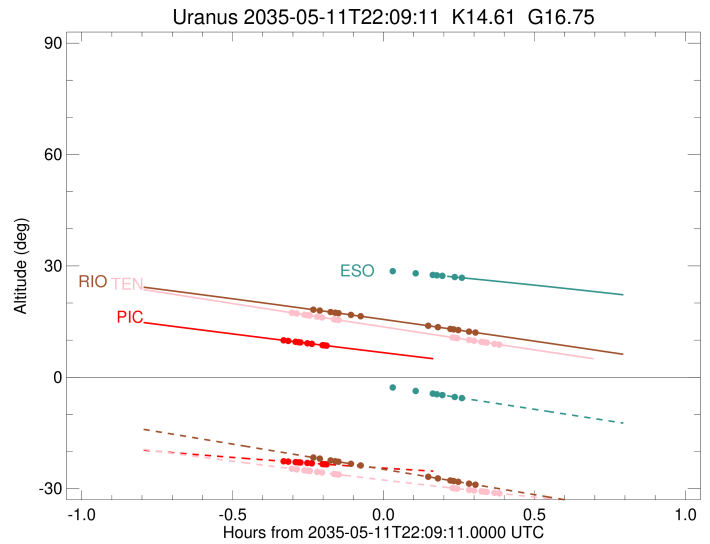
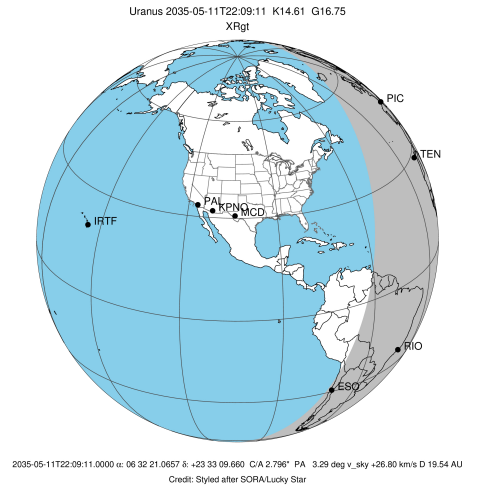


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-05-11T21:50:39.302		17.44	-24.59	51530.57	-19.65		
lambda	I	2035-05-11T21:51:56.883		17.17	-24.81	50026.71	-19.05		
delta	I	2035-05-11T21:53:29.574		16.85	-25.07	48300.35	-18.18		
gamma	I	2035-05-11T21:54:07.246		16.71	-25.18	47622.41	-17.80		
eta	I	2035-05-11T21:54:32.498		16.63	-25.25	47176.12	-17.54		
beta	I	2035-05-11T21:56:01.949		16.31	-25.50	45650.62	-16.55		
alpha	I	2035-05-11T21:56:59.416		16.11	-25.66	44718.67	-15.83		
4	I	2035-05-11T21:59:26.684		15.60	-26.08	42526.57	-13.87		
5	I	2035-05-11T21:59:41.964		15.54	-26.12	42314.75	-13.64		
6	I	2035-05-11T22:00:20.889		15.41	-26.23	41794.94	-13.06		

No planet occultations

6	E	2035-05-11T22:22:51.464		10.73	-29.85	41809.50	13.08		
5	E	2035-05-11T22:23:25.581		10.61	-29.94	42270.52	13.66		
4	E	2035-05-11T22:23:46.179		10.54	-29.99	42541.38	13.89		
alpha	E	2035-05-11T22:26:09.600		10.05	-30.36	44687.21	15.87		
beta	E	2035-05-11T22:27:10.581		9.84	-30.51	45673.95	16.59		
eta	E	2035-05-11T22:28:38.362		9.54	-30.73	47176.12	17.59		
gamma	E	2035-05-11T22:29:03.518		9.45	-30.80	47621.87	17.85		
delta	E	2035-05-11T22:29:41.119		9.33	-30.89	48300.35	18.23		
lambda	E	2035-05-11T22:31:13.545		9.01	-31.12	50026.71	19.11		
epsilon	E	2035-05-11T22:32:05.261		8.83	-31.25	51026.64	19.71		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2035-05-11T22:12:39.710  
 Event type : XRgt  
 : No Uranus occs  
 : Ring occs: geocentric, topocentric  
 Observer code : RIO  
 Location : Rio de Janeiro  
 Latitude (deg) : -22.89506  
 E. Longitude (deg) : 316.77708  
 Altitude (km) : 0.033  
 Gaia source ID : 3382553480249496448  
 2Mass ID (if available) : 06322106+2333095  
 ICRS Star Coord at Epoch: 06h 32m 21.06575s +23:33:09.65981s  
 RUWE (>1.4 is poor) : 0.98  
 K magnitude : 14.612  
 G magnitude : 16.745  
 RP magnitude : 16.047  
 BP magnitude : 17.304  
 DUPflag : 0  
 Distance (au) : 19.543  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 26.80  
 Sun-Target sep (deg) : 46.84  
 Sun-Moon sep (deg) : 10.31  
 B (ring opening deg) : 68.72  
 PA of pole (deg) : 70.59  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 3.020  
 C/A sky separation (km) : 42808.1  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk  
 URKALLvl.spk  
 ura111.bsp  
 IAU\_URANUS\_for\_RINGFIT.tpc  
 vgr2.ura111.bsp  
 ura161.bsp  
 vgr2.ura161.bsp  
 peph.ura160.bsp  
 earthstns\_itr93\_040916.bsp  
 earth\_720101\_070426.bpc  
 earth\_200101\_990628\_predict.bpc  
 pg3f0000r.bsp  
 pg490000r.bsp  
 naif0012.tls  
 earth\_flat\_IAU.spk

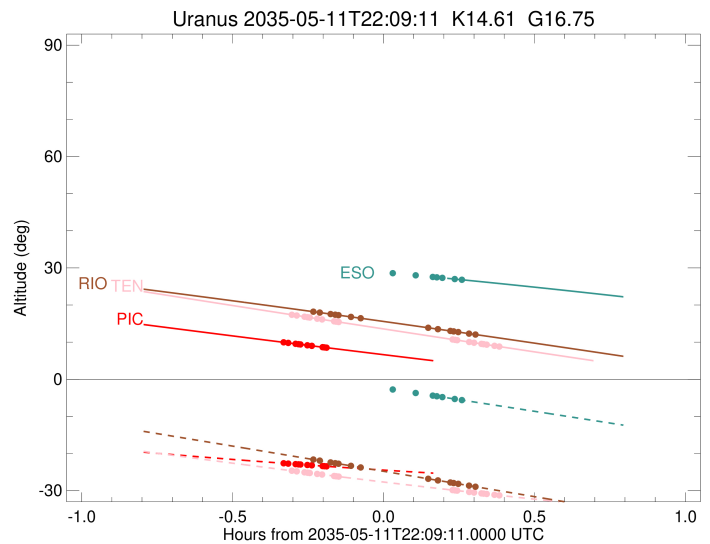
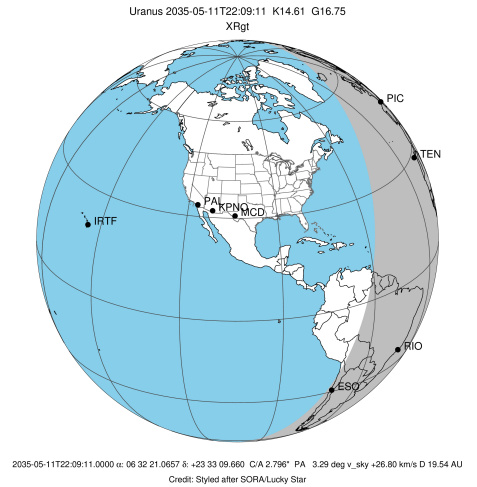


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-05-11T21:54:52.554		18.27	-21.55	51496.43	-15.21		
lambda	I	2035-05-11T21:56:32.224		17.96	-21.92	50026.71	-14.17		
delta	I	2035-05-11T21:58:41.309		17.56	-22.41	48300.35	-12.55		
gamma	I	2035-05-11T21:59:37.054		17.39	-22.62	47621.64	-11.79		
eta	I	2035-05-11T22:00:15.704		17.27	-22.76	47176.12	-11.25		
beta	I	2035-05-11T22:02:45.387		16.80	-23.33	45656.07	-9.03		
alpha	I	2035-05-11T22:04:42.905		16.43	-23.77	44707.46	-7.09		

No planet occultations

alpha	E	2035-05-11T22:17:58.018		13.89	-26.78	44693.27	7.10		
beta	E	2035-05-11T22:19:59.127		13.50	-27.24	45668.88	9.04		
eta	E	2035-05-11T22:22:27.133		13.02	-27.80	47176.12	11.27		
gamma	E	2035-05-11T22:23:05.691		12.90	-27.95	47621.28	11.81		
delta	E	2035-05-11T22:24:01.370		12.72	-28.16	48300.35	12.57		
lambda	E	2035-05-11T22:26:10.205		12.30	-28.65	50026.71	14.20		
epsilon	E	2035-05-11T22:27:23.818		12.06	-28.93	51103.76	15.24		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2035-05-11T22:11:21.600  
 Event type : XRgt  
 : No Uranus occs  
 : Ring occs: geocentric, topocentric  
 Observer code : ESO  
 Location : European Southern Obs. (3.6m)  
 Latitude (deg) : -29.26097  
 E. Longitude (deg) : 289.26831  
 Altitude (km) : 2.400  
 Gaia source ID : 3382553480249496448  
 2Mass ID (if available) : 06322106+2333095  
 ICRS Star Coord at Epoch: 06h 32m 21.06575s +23:33:09.65981s  
 RUWE (>1.4 is poor) : 0.98  
 K magnitude : 14.612  
 G magnitude : 16.745  
 RP magnitude : 16.047  
 BP magnitude : 17.304  
 DUPflag : 0  
 Distance (au) : 19.543  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 26.80  
 Sun-Target sep (deg) : 46.84  
 Sun-Moon sep (deg) : 10.56  
 B (ring opening deg) : 68.72  
 PA of pole (deg) : 70.59  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 3.121  
 C/A sky separation (km) : 44236.6  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk  
 URKALLvl.spk  
 ura111.bsp  
 IAU\_URANUS\_for\_RINGFIT.tpc  
 vgr2.ura111.bsp  
 ura161.bsp  
 vgr2.ura161.bsp  
 peph.ura160.bsp  
 earthstns\_itr93\_040916.bsp  
 earth\_720101\_070426.bpc  
 earth\_200101\_990628\_predict.bpc  
 pg3f0000r.bsp  
 pg490000r.bsp  
 naif0012.tls  
 earth\_flat\_IAU.spk



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-05-11T21:54:51.871		30.49	0.56x	51484.89	-13.83		
lambda	I	2035-05-11T21:56:41.658		30.28	0.18x	50026.71	-12.61		
delta	I	2035-05-11T21:59:09.943		30.00	-0.32x	48300.35	-10.64		
gamma	I	2035-05-11T22:00:16.727		29.87	-0.55x	47621.45	-9.68		
eta	I	2035-05-11T22:01:04.444		29.78	-0.71x	47176.12	-8.98		
beta	I	2035-05-11T22:04:30.236		29.37	-1.42x	45658.40	-5.73		
alpha	I	2035-05-11T22:12:32.747		28.39	-3.07x	44704.63	-0.03		

No planet occultations

alpha	E	2035-05-11T22:08:37.072		28.87	-2.26x	44704.60	0.06		
beta	E	2035-05-11T22:15:32.856		28.01	-3.69x	45666.57	5.73		
eta	E	2035-05-11T22:18:57.033		27.57	-4.40x	47176.12	8.99		
gamma	E	2035-05-11T22:19:44.678		27.47	-4.57x	47621.15	9.69		
delta	E	2035-05-11T22:20:51.432		27.32	-4.80x	48300.35	10.65		
lambda	E	2035-05-11T22:23:19.555		26.99	-5.31	50026.71	12.63		
epsilon	E	2035-05-11T22:24:43.235		26.81	-5.60	51126.53	13.85		